

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Kent Wendorf, et al.

Application No.: 09/839,957

Filing Date: April 19, 2001

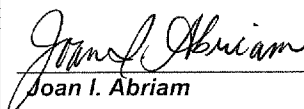
For: SYSTEM AND METHOD FOR  
DISTRIBUTING GUARANTEED  
BANDWIDTH AMONG SERVICE  
GROUPS IN A NETWORK NODE

Examiner: Ryman, Daniel J.

Art Unit: 2616

**CERTIFICATE OF TRANSMISSION**

I hereby certify that this correspondence is  
being submitted electronically via EFS Web on  
the date shown below.

  
Joan I. Abriam

April 29, 2008  
Date

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

Enclosed is a copy of Information Disclosure Citation Form PTO-1449 or PTO/SB/08 together with copies of the documents cited on that form, except for copies not required to be submitted (e.g., copies of U.S. patents and U.S. published patent applications need not be enclosed). It is respectfully requested that the cited documents be considered and that the enclosed copy of Information Disclosure Citation Form PTO-1449 or PTO/SB/08 be initialed by the Examiner to indicate such consideration and a copy thereof returned to applicant(s).

**The applicants wish to bring to the attention of the Examiner the following prior art:**

**In an ATM switch, Quality-of-Service ("QoS") features allow a certain rate of traffic to be "guaranteed." E.g., a certain minimum cell rate may be specified. On an ingress path (into the switch fabric) the guaranteed traffic maybe competing**

with best-effort traffic for bandwidth through the switch fabric. The switch fabric itself may have only a static programming of the guaranteed bandwidth from each (ingress) slot to each (egress) slot. When the incident traffic varies from the minimum guarantees, the static allocation by the switch fabric may result in unfair bandwidth distribution. E.g. if one slot has guaranteed the full bandwidth to another slot, but only 60% of that traffic is in the guaranteed class, the fabric nonetheless grants the remaining 40% to best-effort classes from the same line card. Another line card with best-effort traffic trying to go to the same egress slot would be starved out.

In the prior art, the attempt is made to indicate to the switch fabric whether or not the selected Service Group (“SG”) is meeting its guaranteed bandwidth (“GBW”) for its service class. When not meeting its minimum guaranteed bandwidth, the “speed-up” signal is asserted on a per SG basis. By monitoring this information, the fabric can dynamically determine the guaranteed bandwidth requirements from each ingress line card, and distribute the remaining bandwidth fairly among the remaining incident traffic.

The Class-of-Service Buffer Server (“CBS”) is a class-based scheduler that supports minimum guaranteed bandwidth scheduling among all service classes. A single COSB is selected by the CBS from the COSB’s within a preselected SG. With each service division, the CBS determines whether the selection is in the guaranteed bandwidth (“GBW”) region, or whether it is excess bandwidth, i.e. “ok-to-serve.” The GBW service is referred to as “must-serve” since the scheduler must serve this Class in order to meet the GBW. The determination that the selection is in “must-serve” or “ok-to-serve” is based upon the comparison of a Current Time (“CT”) counter and the per COSB Theoretical-Departure-Time (“TDT”) of the selected COSB. In the must-serve region, the

COSB lagging most behind the Current Time is selected for service and the Inter-Cell-Gap ("ICG") value is added to the TDT of the selected COSB to account for the current selection.

The prior art QE48 of Stratacom, Inc. of San Jose, California, generated the speed-up indication in the following manner. Speed-up is implemented with a counter per SG and global set and reset thresholds. The counter is incremented or decremented depending on the region the selected COSB is served from. When the selected COSB is in the must-serve region, the counter increments for each service and reaches the set threshold, speed-up is asserted for that SG. The counter saturates at the set threshold in the event that more increments occur. When the selected COSB is served from the ok-to-serve region, the counter decrements for each valid service until reaching the reset threshold when speed-up is de-asserted. The counter retains its value and increments or decrements depending on the region of service. The count is updated for every cell that departs from a Class of Service Buffer. Even under the speed-up condition, SG selection is not prioritized for the speed-up request.

The prior art did not prioritize SG selection with speed-up but had to limit the percentage of GBW it could allocate through the switch to a destination line card.

The prior art continued to assert speed-up after meeting their GBW and did not account for borrowed/stolen bandwidth which another SG (or line card) might need to meet its GBW. This lost bandwidth compounded the necessity to limit GBW allocation.

Pursuant to 37 C.F.R. § 1.97, the submission of this Information Disclosure Statement is not to be construed as a representation that a search has been made and is not to be construed as an admission that the information cited in this statement is material to patentability.

Pursuant to 37 C.F.R. § 1.97, this Information Disclosure Statement is being submitted under one of the following (as indicated by an "X" to the left of the appropriate paragraph):

XXX 37 C.F.R. §1.97(b).

\_\_\_\_\_ 37 C.F.R. §1.97(c). If so, then enclosed with this Information Disclosure Statement is one of the following:

\_\_\_\_\_ A statement pursuant to 37 C.F.R. §1.97(e) or

\_\_\_\_\_ A check for \$180.00 for the fee under 37 C.F.R. § 1.17(p).

\_\_\_\_\_ 37 C.F.R. §1.97(d). If so, then enclosed with this Information Disclosure Statement are the following:

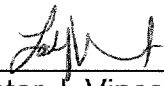
- (1) A statement pursuant to 37 C.F.R. §1.97(e); and
- (2) A check for \$180.00 for the fee under 37 C.F.R. §1.17(p) for submission of the Information Disclosure Statement.

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: Apr. 129, 2008

  
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